This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (currently amended). A method of determining at least one parameter of a waveguide from wavefield data acquired from wave propagation in the waveguide, the method comprising the steps of:

obtaining a first and a second dispersion curves corresponding to different guided wave modes in the frequency domain from the wavefield data; ~~and~~

determining at least one parameter of the waveguide from a frequency interval between the first dispersion curve and the second dispersion curve;

obtaining the first and second dispersion curves in the frequency and phase velocity domain; and

determining the velocity of wave propagation in the waveguide as the asymptotic velocity limit of the dispersion curves.

2 (canceled).

3 (original). A method as claimed in claim 1 comprising determining the frequency separation $\Delta f(V)$ between the first and second dispersion curves at a first value of the phase velocity V.

4 (original). A method as claimed in claim 3 comprising determining the thickness h of the waveguide using:

$$\Delta f(V) = \frac{c_1}{2h\sqrt{1-\frac{c_1^2}{V^2}}}$$

where c_1 is the velocity of wave propagation in the waveguide.

5 (canceled).

6 (canceled).

7 (canceled).

8 (currently amended). A method as claimed in claim [[2]]1 comprising determining values of the frequency separation between the first dispersion curve and the second dispersion curve for at least two different values of the phase velocity.

9 (original). A method as claimed in claim 8 comprising determining the thickness of the waveguide from the values of the frequency separation between the first dispersion curve and the second dispersion curve for at least two different values of the phase velocity.

10 (original). A method as claimed in claim 8 comprising determining the thickness h of the waveguide using:

$$h = \frac{c_1}{2\Delta f(V)\sqrt{1-\frac{c_1^2}{V^2}}} \qquad \forall V$$

11 (currently amended). A method as claimed in claim [[2]]1 and comprising the step of auto-correlating in the frequency-velocity domain the first and second dispersion curves, and determining at least one parameter of the waveguide from the results of the auto-correlation step.

12 (original). A method of processing wavefield data, the method comprising: acquiring wavefield data; determining at least one parameter of a waveguide according to a method of claim 1; and taking the at least one parameter into account during subsequent processing of the wavefield data.

13 (original). A method as claimed in claim 12 wherein the wavefield data are seismic wavefield data.

14 (original). A method as claimed in claim 1 wherein the step of determining at least one parameter is independent of density of the waveguide.

15 (original). A method as claimed in claim 14 wherein the step of determining at least one parameter is independent of density of a layer below the waveguide.

16 (currently amended). A method as claimed in claim [[2]]1 wherein the first and second dispersion curves are adjacent in the frequency domain and phase velocity domain.

17 (currently amended). An apparatus for determining at least one parameter of a waveguide from wavefield data acquired from wave propagation in the waveguide, the apparatus comprising:

a processor for obtaining first and second dispersion curves corresponding to different guided wave modes in the frequency domain from the wavefield data; ~~and~~

a proce[[s]]ssor for determining at least one parameter of the waveguide from a frequency interval between the first dispersion curve and the second dispersion curve;

a calculator for obtaining first and second dispersion curves in the frequency and phase velocity domain;

a calculator for determining the velocity of wave propagation in the waveguide from the dispersion curves and wherein said apparatus

is adapted to determine the velocity of wave propagation in the waveguide as the asymptotic velocity limit of the dispersion curves.

18 (canceled).

19 (original). An apparatus as claimed in claim 17 comprising a frequency separator for determining the frequency separation $\Delta f(V)$ between the first and second dispersion curves at a first value of the phase velocity V.

20 (original). An apparatus as claimed in claim 19 and comprising thickness meter for determining the thickness h of the waveguide using:

$$\Delta f(V) = \frac{c_1}{2h\sqrt{1-\frac{c_1^2}{V^2}}}$$

where c_1 is the velocity of wave propagation in the waveguide.

21 (canceled).

22 (canceled).

23 (canceled).

24 (currently amended). An apparatus as claimed in claim [[18]]17 adapted to determine values of the frequency separation between the first dispersion curve and the second dispersion curve for at least two different values of the phase velocity.

25 (original). An apparatus as claimed in claim 24 adapted to determining the thickness of the waveguide from the values of the frequency separation between the first dispersion curve and the second dispersion curve for at least two different values of the phase velocity.

26 (original). An apparatus as claimed in claim 24 comprising means for determining the thickness h of the waveguide using:

$$h = \frac{c_1}{2\Delta f(V)\sqrt{1-\frac{c_1^2}{V^2}}} \qquad \forall V$$

27 (currently amended). An apparatus as claimed in claim [[18]]17 comprising correlator for auto-correlating, in the frequency-velocity domain, the first and second

dispersion curves, and a calculator for determining at least one parameter of the waveguide from the output of the auto-correlation means.

28 (original). An apparatus as claimed in claim 17 comprising a programmable data processor.

29 (original). A storage medium containing a program for the data processor of an apparatus as defined in claim 28.

30 (original). A storage medium containing a program for controlling a programmable data processor to carry out a method as defined claim 1.

31 (original). An apparatus as claimed in claim 17 wherein the processor for determining at least one parameter is independent of density of the waveguide.

32 (original). An apparatus as claimed in claim 31 wherein the proceessor for determining at least one parameter is independent of density of a layer below the waveguide.

33 (currently amended). An apparatus as claimed in claim [[18]]17 wherein the first and second dispersion curves are adjacent in the frequency domain and phase velocity domain.